

THE SOUTH AFRICAN SPECIES OF AIZOACEAE.

I. *ADENOGRAMMA* & *POLPODA*.

By R. S. ADAMSON.

The two genera *Adenogramma* and *Polpoda* are endemic to the S.W. Cape. Together with *Psammotropha* they constitute a group characterised by the possession of carpels with a single basal ovule.

The three genera in this group have been associated by the majority of authors with the tribe *Mollugineae* in whatever family that has been placed. (e.g. Lindley Veg. King, ed. 2. 498. 1847: Endlicher Gen. Pl. 884. 1840: Sonder F. Cap. 1. 152. 1859: Bentham & Hook. Gen. Pl. 1. 855. 1869: Hutchinson Fam. Fl. Pl. 128. 1920.) On the other hand, certain authors (e.g. Heimerl Engl. & Prantl. Nat. Pflanzf. 1. b. 8. 1889: Della Torre & Harms Gen. Siphon. 1. 152. 1900: v. Post & Kuntze Lex. Gen. Phan. 639. 1904: Wettstein Handb. Syst. Bot. ed. 2. 536. 1911: Phillips Gen. S. Afr. Pl. 230. 1926), have laid stress on the solitary ovules and transferred these genera to the family *Phytolaccaceae*. An intermediate position is taken up by Pax & Hoffmann (Engl. & Prantl. Nat. Pflanzf. ed. 2. 16. c. 194. 1934), who retain the genera in Aizoaceae but make them the representatives of a tribe quite separate from *Mollugineae*.

The very close similarity in both vegetative and floral characters between *Adenogramma* and *Psammotropha* on the one hand and *Mollugo* and *Pharnaceum* on the other, renders the placing of them in separate families appear quite unnatural. It would seem that the uniovulate carpel represents a reduction from the multiovulate, *Psammotropha* standing in an intermediate position between *Pharnaceum* and the extreme condition in *Adenogramma*. *Polpoda*, while very close to the others in floral structure, is very distinct and unique in its vegetative habit.

In the course of this investigation in addition to fresh material, specimens in the following herbaria have been examined:—

Bolus Herb., Cape Town	..	..	..	BOL
University of Cape Town	..	..	..	CT
S. Afr. Museum, Cape Town	..	..	..	SAM
Nat. Bot. Gds., Kirstenbosch	..	..	..	NBG
Nat. Herb., Pretoria	..	..	..	PRE
Albany Mus., Grahamstown	..	..	..	GRA
Royal Bot. Gds., Kew	..	..	..	K
British Mus. (Nat. Hist.) London	..	..	..	BM

To the Directors and Curators of these institutions thanks are returned for the facilities afforded for the examination of specimens.

ADENOGRAMMA

Reichb. f. Icon. Bot. Exot. 2. 3. t109. 1828. *Steudel* Presl Symb. Bot. 1. 3. t. 2. 1829.

Annual or perennial herbs, sometimes woody at the base, usually prostrate or sprawling. *Leaves* small, simple, mostly linear, in whorls at least in the upper parts: stipules small, membranous or thread-like, often caducous. *Flowers* small, white, in axillary cymose groups. *Perianth* segments 5, free or slightly connate at the base, white with a green central portion, usually obtuse and more or less cucullate. *Stamens* 5, alternate with the perianth segments, shorter than the perianth. *Ovary* superior, 1-chambered, with 1 basal ovule: *style* often asymmetrical: *stigma* capitate. *Fruit* indehiscent, a 1-seeded nut, usually laterally compressed.

The type species is *A. Mollugo* Reichb. f.

A rather uniform genus confined to the coastal plain and lowest mountain slopes from Namaqualand to the Cape and eastwards to Swellendam. Only two species are recorded further east.

The species were revised by Fenzl in 1840 and his arrangement was adopted by Sonder in Fl. Cap. Since then little attention has been given to the genus. Ten species are now recognised of which three are described for the first time.

Fenzl's specimens in Herb. Vienna were destroyed during the war 1939—45 and in some cases lectotypes have had to be selected.

KEY TO THE SPECIES.

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| 1. Lower leaves alternate, crowded, the upper in whorls: stems woody | 1. <i>rigida</i> |
| 1. All the leaves in whorls. | |
| 2. Perennial: stems more or less woody, at least at the base. | |
| 3. Leaves revolute, subulate: stems stout, hairy: flowers subsessile | 5. <i>asparagoides</i> |
| 2. Leaves flat: stems slender, glabrous: flowers pedicellate. | |
| 4. Leaves ovate or obovate, thin: pedicels as long as the leaves | 2. <i>sylvatica</i> |
| 4. Leaves lanceolate or linear-lanceolate, firm: Pedicels shorter than the leaves. | |
| 5. Stems wiry: leaves flat: fruit brown, finely rugose | 3. <i>Lichtensteiniana</i> |
| 5. Stems thread-like: leaves involute: fruit black, shining | 4. <i>capillaris</i> |
| 2. Annuals: stems herbaceous. | |
| 6. Perianth segments not imbricate, the edges pressed together and bent outwards | 10. <i>physocalyx</i> |
| 6. Perianth segments imbricate. | |
| 7. Perianth segments closely wrapped round the fruit and falling with it. | |
| 8. Leaves linear or linear-lanceolate: fruit with a short oblique beak | 6. <i>glomerata</i> |

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| 8. Leaves oblanceolate; fruit not produced into a beak | 9. <i>littoralis</i> |
| 7. Perianth segments spreading or loosely surrounding the fruit, not falling with it. | |
| 9. Perianth in fruit ascending, finally deciduous; fruit laterally compressed, with a flat rough-edged beak | 7. <i>Mollugo</i> |
| 9. Perianth in fruit spreading, persistent; fruit abruptly narrowed to a smooth beak | 8. <i>congesta</i> |

1. **A. rigida** (Bartl.) Sond. Fl. Cap. I. 149. 1859. *Pharnaceum rigidum* Bartl. Linnaea 7. 626. 1832. *Psammotropha rigida* Fenzl Ann. Wien. Mus. 2. 266. 1840.

Stems many from the root, sprawling, 20—60 cm. long, slightly woody at the base, the lower part with crowded alternate ascending leaves, the upper with whorled leaves separated by internodes 3—7 cm. long, perennating from buds on either part. *Leaves* dark brownish-green, the lower linear, 1—3 cm. long, 0·1—0·15 cm. wide, acute or almost pungent, widened and slightly sheathing at the base, the upper similar but 0·5—1 cm. long. *Stipules* linear, thread-like, deciduous. *Flowering* portion with a few long and many short branches. *Flowers* axillary, subsessile, about 2 mm. long. *Perianth* segments obtuse, hooded, the green strip extending to the tip. *Anthers* yellow. *Fruit* ovoid, not longer than the perianth.

The type is *Ecklon* (Tygerberg) in herb. Sonder (S).

CAPE. Melkbosch Strand *Adamson* 4682; Maitland *Guthrie* 771 (CT): Rondebosch *Wolley-Dod* 3946, 3948 (BOL): Muizenberg *Bolus* 4521 (BOL, K): Fishhoek *Wolley-Dod* 3415 (K): Kommetje *Adamson* 2228 (CT): *Wolley-Dod* 3415 (BM, K).

CALEDON. Houwhoek *Schlechter* 7371 (BM, BOL, GRA, K, SAM). Without locality:—*Harvey* 461 (BM, K): s.n. (K).

2. **A. sylvatica** (E. & Z.) Fenzl Ann. Wien. Mus. 2. 275. 1840. *Steudelina sylvatica* E. & Z. Enum. 283. 1836. *S. viridis* Gandog. Bull. Soc. Bot. Fr. 59. 708. 1912.

Slender, sprawling or almost scandent, herbaceous or slightly woody. *Stems* brown, glabrous, 50—100 cm. long, branched. *Leaves* in distant whorls usually of 4, persistent, ovate or ovate-lanceolate, 3—8 mm. long, 1—4 mm. wide, pale green, thin, acute, hair-pointed. *Stipules* small, reflexed, thread-like, about 1 mm. long. *Flowers* in the upper axils: pedicels thread-like, as long as or longer than the leaves, often appearing as if below the leaves. *Perianth* segments 2 mm. long, white with a narrow green midrib, obtuse, cucullate. *Anthers* yellow. *Fruit* rotund-ovate, slightly compressed laterally, not prolonged at the top, brown, finely granulate.

The type is *E. & Z.* 1809 in herb. Berlin, co-type in S.

Sheltered places by streams or under rocks on the lower mountain slopes.

WORCESTER. Louwhoek Peak *Stokoe* (SAM).

STELLENBOSCH. Helderberg, *Galpin* 12390 (PRE), 12391 (K): *Parker* 4543 (BOL, K, NBG): *Salter* 4238 (BOL, K, PRE): Diep Gat Ravine, *Esterhuysen* 12514 (BOL, NBG, PRE): Haalhoek Spitzkop, *Esterhuysen* 13549 (BOL).

PAARL. Franschhoek, *E. P. Phillips* 1135 (SAM): Wemmershoek, *Esterhuysen* 11276 (BOL, NBG): April Peak, *Esterhuysen* 4023 (BOL, NBG, PRE): Seven Sisters, *Stokoe* (SAM).

CALEDON. Somerset Sneeuwkop, *Stokoe* (SAM): Caledon, *Bolus* 9144 (BOL, K): Swartberg, *Ecklon & Zeyher* 1809 (SAM), 2488 (K, PRE, SAM): *Galpin* 4081 (GRA, PRE): *Schlechter* 9770 (BM, BOL, GRA, K, PRE): *Zeyher* s.n. (SAM): River Sonderende *Schlechter* 5622 (BM, BOL, GRA, K, PRE).

SWELLENDAM. Voormansbosch, *Zeyher* 2 (SAM).

LADISMITH. Swartberg, *Adamson* 3694 (CT): Water Kloof, *Hutchinson* 1120 (K).

RIVERSDALE. Langeberg, *Schlechter* 1977 (BM, GRA).

UNIONDALE. Kamanassie Mts., *Esterhuysen* 16486 (BOL).

UITENHAGE. Otterford, *Rodin* 1133 (BOL, PRE). Without locality:—*Drege* (*Mollugo aristata* a & b) (K, PRE), (*A. sylvatica* a) (SAM).

3. **A. Lichtensteiniana** (Schult.) Druce Rep. Bot. Ex. Club. Br. Is. 1916. 603. 1917. *Pharnaceum Lichtensteinianum* Schult. Syst. 6. 626. 1820. *Mollugo Lichtensteiniana* Ser. in DC. Prodr. 1. 393. 1824. *Ph. diffusum* Bartl. Linnaea 7. 625. 1832. *Steudelina diffusa* E. & Z. Enum. 283. 1836. *A. diffusa* Fenzl Ann. Wien. Mus. 2. 275. 1840.

Stems wiry, woody at the base, sprawling, much branched, up to 1 m. long, glabrous, brown. *Leaves* in whorls of 6, 4 or 2, separated by internodes 0.5—2.5 cm. long, the lower deciduous. *Leaves* 3—5 mm. long, 1—2 mm. wide, firm, oblanceolate, acute, flat, green or brown, sometimes slightly glaucous. *Stipules* caducous. *Flowers* in groups of 2—5, most commonly 3, on pedicels 1—3 mm. long, usually shorter than the leaves. *Perianth* 1—2 mm. long, the segments obtuse, connate at the base, with a bulging green midrib for two-thirds their length. *Anthers* red or orange. *Fruit* rotund-pear-shaped, slightly compressed, acute at the tip, slightly ridged at the edge, brown, finely rugose, shorter than the perianth.

The type is *E. & Z.* 1811 in herb. Vienna, lectotype in SAM.

Sprawling among bushes on stony mountain and hill slopes.

Like *A. sylvatica* but readily recognised by the wiry stems, firm narrow leaves without hair-points, and the shorter pedicels.

CLANWILLIAM. Middelberg Plateau, *Compton* 12721 (NBG).

CERES. Cold Bokkeveld Mts., *Adamson* 4722, 4724; *Ceres*, *Bolus* 8363 (BOL, PRE).

PIKETBERG. Moutons Valley, *Pillans* 7540 (BOL).

WORCESTER. De Doorns, *Bolus* 13113 (BOL); Mostertshoek Twins, *Esterhuysen* 9903 (BOL).

STELLENBOSCH. Helderberg, *Salter* 4238 (BM); Gordons Bay, *Adamson* 4685, 4687; *Marloth* 10107 (PRE).

CAPE. Cape Town, *Guthrie* 1180, 1185 (CT), 4616 (BOL): Table Mt., *Adamson* 983 (BOL); *Bolus* 8363 (BOL); *Burchell* 8436 (K); *E. & Z.* 1811 (SAM); *Wilms* 3231 (BM, K); Devils Peak, *Rehmann* 1118 (BM); Camps Bay, *Adamson* 3536; *Burchell* 318 (K); *Barker* 3203 (NBG); *Wolley-Dod* 1721 (K); *Zeyher* 4806 (BOL); Kasteel Poort, *Zeyher* 4727 (BOL, GRA); Chapmans Peak *Compton* 15430 (NBG); Fishhoek, *Adamson* 2931 (CT); Simonsberg, *Wolley-Dod* 871 (K); Klaver Valley, *Salter* (BM); Simonstown, *Wright* (K); Smitswinkel Bay, *Lewis* (SAM); Patrys Vlei, *Salter* 8470 (BOL).

CALEDON. Sir Lowry Pass, *Penther* 2306 (BM); Steenbrass, *Adamson* 4689; Houwhoek, *Schlechter* 9379 (BM, GRA, K, PRE); Shaw's Mt., *Galpin* 4082 (GRA); Caledon, *Pappe* (SAM); *Zeyher* (SAM).

SWELLENDAM. Swellendam, *Bowie* (BM); Potteberg, *Adamson* 4802.

RIVERSDALE. Albertinia, *Muir* 2440 (PRE).

ALBANY. Bothasberg, *MacOwan* 1331 (SAM). Without locality:—*Drege* (*A. microcarpum*) (BM, K); *Masson* (BM); *Zeyher* 613 (SAM), 626 (K), 618 (BM, BOL, K).

4. *A. capillaris* (E. & Z.) Druce Rep. Bot. Ex. Club Br. Is. 1916. 603. 1917. *Steudelina capillaris* E. & Z. Enum. 283. 1836. *A. lampocarpa* E. Mey. ex Fenzl Ann. Wien. Mus. 2. 276. 1840.

Like *A. Lichtensteiniana* but much more slender and less woody. *Stems* very thin, thread-like. *Leaves* in whorls of 4, linear-lanceolate, more or less involute, shortly hair-pointed. *Stipules* minute. *Flowers* in groups of 2 or 3; pedicels short at first but lengthening at the fruiting stage to at least the length of the leaves. *Perianth* segments obtuse with a green central part. *Fruit* smooth, shining, almost black, more pointed than that of *A. Lichtensteiniana*.

The type is *E. & Z.* 1810 in herb. Berlin. Lectotype *Drege* s.n. (K). Sheltered places usually by streams on mountains.

Closely allied to the preceding species but differing in the fruit.

WORCESTER. Stettynsberg, *Esterhuysen* 11104 (BOL): Du Toits Kloof, *Drege* (BM).

BREDASDORP. Elim, *Bolus* 8608 (BOL).

KNYSNA. Goukamma, *Burchell* 5595 (K). Without locality:—*Drege* s.n. (BM, K, PRE): *Masson* (BM).

5. *A. asparagoides* Adamson sp. nov.

Caules lignosi brevissime pilosi decumbentes ramosi ramis saepe oppositis ramulosis. Folia verticillata distantia linearia revoluta vel subulata. Florum pedicelli foliis breviores.

A sprawling Asparagus-like plant with many woody stems. *Stems* 25—50 cm. long, covered with very short hairs: internodes 3—5 cm. long. Branches usually in pairs. *Leaves* in distant whorls of 4—6, linear, 5—8 mm. long, revolute and apparently subulate, shortly hair-pointed: Stipules linear, soon falling. *Flowers* subsessile, in cymose groups of 3 in the uppermost axils, the pedicels much shorter than the leaves. *Perianth* segments obtuse, white with the green band less than half the length. *Ovary* slightly compressed vertically: *style* not symmetrical.

The type is *Esterhuysen* 5930 (BOL).

Very distinctive in habit and leaf.

CLANWILLIAM. Barrage, *Esterhuysen* 5930 (BOL).

6. *A. glomerata* (L.f.) Druce Rep. Bot. Ex. Club. Br. Is. 1916, 603. 1917. *Pharnaceum glomeratum* L.f. Supp. Pl. 185. 1781. *P. Mollugo* L. Sp. Pl. ed. 2. 389. 1763. *non* Mant. 2. 531. 1771. *A. Mollugo* Sieb. ex Bartl. Linnaea 7. 625. 1832 *non* Reichb. f. *Mollugo glomerata* Ser. in DC. Prodr. 1. 393. 1824. *Steudelina galioides* Presl Symb. Bot. 1. 4. 1829. (E. & Z. Enum. 283 1836). *A. galioides* Fenzl Ann. Wien. Mus. 2. 277. 1840.

A many stemmed herbaceous annual, prostrate, sprawling or semi-erect. *Stems* up to 50 cm. long, slender, glabrous, branched. *Leaves* in whorls usually of 6, with many at the base. Leaves linear, flat or involute, glabrous, hair-pointed, the basal 1—3 cm. long, the cauline 0.5—1.5 cm. often reflexed. *Flowers* numerous, in the upper axils. Pedicels 1—2 mm. long, shorter than the leaves. *Perianth* segments white with a green centre. *Anthers* yellow, orange or less often red. *Fruit* pear-shaped, slightly compressed, black when ripe, punctate, with a short usually oblique beak at the top. *Perianth* in fruit persistent, closely wrapping round and falling with the fruit.

The type is in herb. *Thunberg*, Uppsala

Common on sand at low altitudes. Abundant after fire or clearance. Very variable in size and habit. The lower leaves often turn orange, red or brown, and fall off in the later stages. Fenzl (l.c.) made two varieties,

planifolia and *teretifolia* but these seem to be dependant on habitat conditions only.

S.W. AFRICA. Klinghardtbergen, *Dinter* 3927 (BOL, K, PRE).

NAMAQUALAND. Port Nolloth, *Bolus* 623 (BM, BOL, K, PRE, SAM): Nabapeep, *Bolus* 9527 (BOL): Garies, *Acocks* 14967 (PRE).

CALVINIA. Lokerberg, *Acocks* 17239 (PRE).

VAN RHYNSDORP. Van Rhyns Pass, *Adamson* 4548: Kareeberg *Schlechter* 8113 (PRE): Zandkraal, *Acocks* 14825 (PRE): Nardouw, *Maguire* 1043 (NBG): Klaver, *Adamson* 4225-6: *Lewis* (BOL).

CLANWILLIAM. Lamberts Bay, *Adamson* 4479, 4483: Graafwater, *Adamson* 4502: Pakhuis, *Adamson* 4515: Clanwilliam, *Adamson* 4493: Barrage, *Esterhuysen* 5930, 5940 a (BOL): Koupoot, *Esterhuysen* 12134 (BOL): Algeria, *Levyns* 3007 (CT): Olifants River, *Phillips* 7502 (K, SAM): *Stephens* 7305 (K): Olifants River Mts., *Howes* 208 (K): rd. to Elandsfontein, *Henrici* 3345 (PRE): Warm Baths, *Stephens* 7162-3 (K), 7164 (K): Grays Pass, *Adamson* 4473: *Godman* 563 a (BM): Swartboschkraal, *Schlechter* 5165 (BOL), 5168 (GRA).

PIKETBERG. Piketberg, *Tyson* 2315 (BOL): Het Kruis, *Stephens & Glover* 8725 (BM, BOL, K): Sauer, *Steyn* 555 (NBG): foot of Grays Pass, *Steyn* 628 (NBG).

CERES. Cold Bokkeveld Mts., *Adamson* 4706-7, 4709, 4719: Katbakkies, *Adamson* (SAM).

TULBAGH. De Hoek, *Lewis* (BOL).

WORCESTER. Bains Kloof, *Gillett* 216 (BOL): Hex River, *Tyson*, 631 (SAM): Du Toits Kloof, *Adamson* 4697.

MALMESBURY. Malmesbury, *Leighton* 608 (BOL): Mamre, *Wasserfall* 446 (NBG): Berg Riv., *Leighton* 615 (BOL): Bok Point, *Compton* 9392 (NBG): Hopefield, *Bolus* (BOL): Centerberg, *Pillans* 8916 (BOL).

STELLENBOSCH. Strandfontein, *Adamson* 4737: Strand, *Parker* 3593 (BOL, NBG): Gordons Bay, *Parker* 4115 (NBG): Stellenbosch, *Duthie* 730 (BOL): Jonkershoek, *Garside* 1174 (K).

CAPE. Melkbosch Strand, *Adamson* 4668: Durbanville, *Adamson* 4690: *Compton* 16031 (NBG): *Henderson* 1202 (NBG): Bellville, *Rogers* 16338 (K): Cape Flats, *Bolus* 2720 (BM, K): *Adamson* 4570: *Wolley-Dod* 3325 (BOL): Maitland, *Guthrie* 696 (CT): Cape Town, *Bolus* 4599 (BOL): *Pappe* (SAM): *Salter* 271/18 (BM): *Zeyher* (SAM): Table Mt., *Ecklon & Zeyher* 1808 (SAM), s.n. (PRE): *MacOwan* 815 (BM, BOL, K, SAM), 2755 (GRA): *Rehmann* 858 (BM): Lion's Head, *Bolus* 2720 (BOL, K): *Kensit* (CT): *Wolley-Dod* 2779 (BM), 3094 (BOL, K): *Zeyher* (SAM): Devils Peak, *Ecklon* 628 (BM, K): *Levyns* (CT): Sea Point, *Tyson* 2452 (BOL): Green Point, *Pappe* (BOL): *Prior* (PRE): Camps Bay, *Marloth* 295 (PRE): Noordhoek, *Godman* 327 (BM): Mowbray, *Marloth* 336

(PRE): Rondebosch, *Adamson* 950 (BOL): *Wolley-Dod* 3325 (BOL, K): Wynberg, *Schlechter* 1513 (BM, BOL, GRA, K): Muizenberg, *Arbuthnot* (CT): Fishhoek, *Wolley-Dod* 3415 (BOL): Red Hill, *Adamson* 1982 (BOL): Millers Point, *Salter* 271/19 (BM).

CALEDON. Caledon, *Gillett* 1123 (BOL): Hermanus, *Galpin* 4082 (GRA, PRE).

SWELLENDAM. Storms Vlei, *Adamson* 4582: Swellendam, *Fries, Norlindh & Weimark* 1507 (BOL).

LADISMITH. Seven Weeks Poort, *Adamson* 4636.

RIVERSDALE. Riversdale, *Muir* 4781 (PRE): Albertinia, *Muir* 1016 (BOL, PRE).

GEORGE. Assequaskloof, *Zeyher* 2489 (BOL, SAM): Ronde Vlei, *Van Niekerk* 202 (BOL).

KNYSNA. Ruigte Vlei, *Fourcade* 1553 (BOL, GRA).

HUMANSDORP. Hancock, *Fourcade* (BOL).

Without locality:—*Alexander* (BM, PRE): *Drege* (*A. microcarpa* a & d) (BM, K, PRE): *Grey* (K): *Masson* (BM): *Oldenburg* (BM): *Zeyher* 614 (K), 620 (BM, BOL, K, PRE, SAM), s.n. (SAM).

7. *A. Mollugo* Reichb. f. Icon. Bot. Exot. 2. 3. t. 109. 1828.

A slender annual. *Stems* more or less erect, up to 30 cm. high but commonly 5—15 cm., the branches usually wide-spreading and often apparently dichotomous. *Leaves* in whorls of 4—6, the basal more numerous, 4—8 mm. long, 0.5—1.5 mm. wide, linear, flat, acute but often not aristate, commonly ascending and more or less glaucous. *Flowers* rather crowded, on very short pedicels, the flowering whorls often close. Flowers like those of *A. glomerata* but the perianth segments white with a small green centre. *Anthers* usually red. *Fruit* brown or almost black, rotund at the base, abruptly or gradually narrowed to a broad flat rough-edged beak. The whole fruit punctate or rugose. Perianth in fruit elongating to twice its length, loosely surrounding the fruit and deciduous before it.

The type is *Reichb. t.* 109. l.c.

Open sand especially where damp in spring.

Variable in size. The basal leaves wither before fruiting time. Much like *A. glomerata* and not easily distinguished in the absence of fruit.

NAMAQUALAND. Kamiesberg, *E. P. Phillips* 7502 (SAM).

VAN RHYNSDORP. Giftberg, *Steyn* 413 (BOL, NBG): Kareeberg, *Schlechter* 8173 (BOL, GRA, K), 8193 (BM): Sandkraal, *Wilman* 918 (BOL): Van Rhyns Pass, *Salter* 1632 (BM): *L. E. Taylor* 2853 (NBG): Klaver, *Wilman* 829 (BOL).

CLANWILLIAM. Clanwilliam, *Adamson* 4495: *Guthrie* (NBG): *Schlechter* 5070 (BM, BOL, GRA, K): Barrage, *Smuts* 2005 (PRE): Zeekoe Vlei, *Levy* 1252 (CT): Graafwater, *Adamson* 4508: Alpha, *Compton* 10931 (NBG): de Hoek, *Schlechter* 8706 (BOL, GRA, K, PRE): Brandewyn Riv., *Maguire* 243 (NBG): Pakhuis Pass, *Godman* 563 a (BM): Nieuwoudt Pass, *Esterhuysen* 8129 (BOL): Algeria, *Salter* 7559 (BOL): Olifants Riv., *Steyn* 494 (NBG): *Wilman* 829 (BOL): Citrusdal, *Leighton* 1088 (BOL): *Thorne* (SAM): Alexandershoek *Schlechter* 5160 (BOL, GRA, PRE).

PIKETBERG. Papkuil *Leighton* 118 (BOL): Kapiteins Kloof, *Pillans* 8000 (BOL): Berg Riv., *Leighton* 415-43 (NBG).

CERES. Klein Vlei, *Adamson* 4712-3, 4717: Gydo, *Hutchinson* 1052 (BOL, K).

TULBAGH. Steendal, *Pappe* (K): Tulbagh, *Zeyher* (SAM): Tulbagh Kloof, *Andreae* 658 (PRE).

WORCESTER. Worcester, *Cooper* 2310 (K): Sanddrift Kloof, *Esterhuysen* 15966 (BOL).

MALMESBURY. Mamre, *Marloth* 8983 (*Baur*) (PRE).

CAPE. Melkbosch Strand, *Adamson* 4680: Milnerton, *Adamson* 2594, 3217: Raapenberg, *Guthrie* 1187 (CT): Green Point, *Ecklon & Zeyher* 1812 (SAM): Rondebosch, *Wolley-Dod* 2885 (BM, BOL, K), 3498 (K): Muizenberg, *Ecklon & Zeyher* 1812 (SAM): Sirkels Vlei, *Adamson* 1160A (BOL, CT)?.

Without locality:—*Drege* (*A. microcarpa* b & c) (K): "Hort. Kew" (BM): *Sieber* 261 (K).

8. *A. congesta* Adamson sp. nov.

A. Mollugine affinis sed differt caulibus minoribus procumbentibus, internodiis brevissimis, floribus congestis, perianthii segmentis anthesin patenti-rotatis, fructibus subdiscoideis in acumine laeve compresso abrupte productis.

A small spreading or rarely suberect many-stemmed annual. *Stems* 5—20 cm. long. *Leaves* in whorls of about 6, the whorls close, the upper crowded. *Leaves* 3—4 mm. long, 1 mm. or less wide, flat, acuminate, aristate. *Stipules* caducous. *Flowers* crowded. *Pedicels* 1—1.5 mm. long. *Perianth* segments rotate-spreading, 1—1.5 mm. long, obtuse, the outer almost flat, the inner cucullate. *Anthers* yellow. *Fruit* smooth, almost discoid, at the top abruptly narrowed to a smooth flattened often asymmetrical beak 1—1.5 mm. long. *Fruit* falling without the persistent perianth.

The type is *Adamson* 4693 (BOL).

A local endemic on damp sand.

Like *A. Mollugo* but quite different in the fruit and fruiting perianth.

WORCESTER. Goudini Baths, *Adamson* 4408: Slanghoek, *Adamson* 4693: Matroosberg, *E. P. Phillips* 2030 (SAM).

9. *A. littoralis* Adamson sp. nov.

Annua ramosissima. Folia parva oblanceolata superiora minima. Flores numerosi foliis longiores. Perianthii segmenta imbricata. Fructus rotundus subcompressus subcarinatus apice acutus perianthio inclusus.

A much branched more or less prostrate pale green annual, the older parts often orange-red. *Stems* slender, 5—15 cm. long. *Leaves* in whorls of 4—6, flat, oblanceolate, 4—6 mm. long, 1·5—2 mm. wide, rounded at the tip, narrowed to the base, the uppermost very small. Stipules membranous, caducous. *Flowers* crowded at the branch tips: pedicels straight, 2—2·5 mm. long. *Perianth* 1—1·5 mm. long, the segments obtuse, hooded, the green band narrow. *Anthers* yellow. *Fruit* brown, punctate or finely rugose, rotund, slightly compressed laterally, with a distinct smooth marginal keel, the tip acute, not prolonged as a beak. Fruit closely wrapped round by and falling with the perianth.

The type is *Adamson* 4704 (BOL).

Open sand at low altitudes, especially near the sea.

Readily distinguished by the broad leaves, crowded flowers and the fruit.

The specimens distributed by Schlechter under the MS name *A. spagnocarpa* belong to this species.

NAMAQUALAND. Hondeklip Bay, *Pillans* (BOL).

VAN RHYNSDORP. Kareeberg, *Schlechter* 11385 (BM, BOL, GRA, K, PRE).

PIKETBERG. Moutons Vlei, *Pillans* 7514 (BOL).

CALEDON. Cape Hangklip, *Adamson* 4413, 4704.

10. *A. physocalyx* Fenzl Ann. Wien. Mus. 2. 276. 1840. *A. Dregeana* Gandog. Bull. Soc. Bot. Fr. 59. 709. 1912.

A small many-stemmed annual, 5—15 cm. high. *Leaves* in whorls usually of 6, linear-filiform, 4—6 mm. long. *Flowers* crowded. Pedicels 3—4 mm. long. *Perianth* 2—3 mm. long, the segments green with a narrow white margin, not imbricate, the edges pressed together and bent outwards. *Fruit* shining, black, pear-shaped, slightly compressed, at the top gradually narrowed to a smooth symmetrical beak. Fruit completely hidden by the enlarged bladder-like perianth and falling with it.

The type is *Drege* (Breede Riv.) (W), lectotype in BM.

Rare in damp places at low altitudes.

The plants described as *A. Dregeana* only differ in having larger flowers.

PAARL. Franschhoek, *E. P. Phillips* 1134 (SAM).

CALEDON. Bot River, *Adamson* 4252 (CT).

SWELLENDAM. Breede Riv., *Drege* s.n. (BM): *Zeyher* 2500 (K, SAM).

Without locality:—*Drege* (*A. homalocarpa*) (BM, K).

POLPODA.

Presl Symb. Bot. 1. 1. t. 1. 1829.

Blepharolepis Nees in Lindl. Nat. Syst. ed. 2. 442. 1836.

Shrublets. *Leaves* small, alternate, appressed, with large membranous fringed stipules. *Flowers* solitary, axillary, subsessile, each with a leaf-like stipulate bract and two bracteoles. *Perianth* segments 4 or 5, with membranous or fringed tips. *Stamens* as many as the perianth segments and alternating with them; *anthers* exserted. *Ovary* superior, 2-chambered, each chamber with one basal ovule: *styles* 2; *stigmas* small. *Fruit* compressed, splitting along the edge.

The type species is *P. capensis* Presl.

Species 2, confined to the S.W. Cape. A genus very distinctive in habit. Flowers protandrous and wind pollinated: large quantities of dusty pollen are produced.

KEY TO THE SPECIES.

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|--|----------------------|
| 1. Leaves crowded, overlapping: flowers 4-merous: perianth fringed: stamens free | 1. <i>capensis</i> |
| 1. Leaves scattered: flowers 5-merous: perianth not fringed: stamens connate at the base | 2. <i>stipulacea</i> |

1. *P. capensis* Presl l.c. *Blepharolopia Eckloniana* Nees. l.c.

A silvery-gray woody shrublet, 20—50 cm. high, erect or sprawling. Branches distant, in groups of 2 or 3, ascending or divaricate. *Leaves* covering the stems, overlapping, oblong-linear, 2—4 mm. long, acute, usually bent outwards at the tips. Stipules membranous, lacerate, longer than and partly covering the leaves. *Flowers* sessile, numerous: bracts 3-fid, 4 mm. or more wide at the base, the central lobe linear 2 mm. long, acute, more or less recurved and soon deciduous, the lateral lobes shorter, 1 mm. long: stipules large, like those of the leaves. Bracteoles small, green, ovate, subacute. *Perianth* shorter than the bracts, the segments 4, hairy on the back, membranous and lacerate at the tip. *Stamens* free; filaments 2—3 times as long as the yellow or orange anthers.

The type is *Presl* l.c. t. 1.

Sand or gravel at low altitudes. Never abundant but rather widespread. The stems continue vegetative growth after flowering.

CLANWILLIAM. Graafwater, *Adamson* 4504: Oudebosch Kloof, *Esterhuysen* 14291 (BOL): Algeria, *Esterhuysen* 7846 (BOL, NBG): Elands Kloof, *Esterhuysen* 4194 (BOL): Keerom, *Esterhuysen* 17877 (BOL).

PIKETBERG. Piketberg, *Zeyher* 1450 (GRA, SAM).

TULBAGH. Tulbagh, *Schlechter* 7510 (BM, GRA, K).

WORCESTER. Orchard, *Esterhuysen* 10938 (BOL): Brand Vlei, *Bond* 376 (NBG).

PAARL. Pic Blanche, *Esterhuysen* 1667 (BOL): Wemmershoek, *Esterhuysen* 17671 (BOL): Klapmuts, *L. Bolus* (BOL).

STELLENBOSCH. Helderberg, *Parker* 4721 (BOL, NBG, SAM).

CAPE. Milnerton, *Adamson* 2573 (CT): Maitland, *Guthrie* 402 (CT): Cape Town, *Harvey* (BM): Table Mt., *Burchell* 44 (K): *Ecklon* (SAM): *Penfold* 280 (NBG): *Zeyher* 1450 (BOL, K, SAM): Devils Peak, *MacOwan* 2972 (SAM): *Tyson* (SAM): *Zeyher* (SAM): Camps Bay, *Burchell* 327 (K): *Ecklon* (SAM): *Miers* (BM): *Zeyher* (SAM): Muizenberg Pipe Track, *Salter* 271/15 (BM): Steenberg, *Adamson* 2116 (CT): Clovelly, *Salter* 4271 (K): Glencairn, *Stokoe* (SAM): Slangkop, *Bond* 1500 (NBG): *Compton* 18019 (NBG): Smitswinkel, *Compton* 15509 (NBG): *Leighton* 379 (BOL): *Salter* 7899 (BOL, NBG).

CALEDON. Rooi Els, *Parker* 4400 (BOL, NBG): Genadendal, *Burchell* 7975 (K).

BREDASDORP. Ratel Riv., *Adamson* 4784.

SWELLENDAM. Breede Riv., *Burke* (K): *Wallich* (K).

MOSSEL BAY. Mossel Bay, *Burchell* 6232 (K).

Without locality:—*Drege* 8262 b (BM, K): *Masson* (BM): *Niven* (BM): *Sieber* 151 (K).

2. *P. stipulacea* (Leighton) Adamson comb. nov. *Psammotropha stipulacea* Leighton J. S. Af. Bot. 13. 61. 1947.

A small erect or diffuse shrublet, 15–30 cm. high. Stems glabrous, with many erect or ascending branches. Leaves more or less scattered, as long as or shorter than the internodes, ovate or oblong, 3–5 mm. long, 1–1.5 mm. wide, concave below, acute at the tip or mucronate with a small bristle. Stipules coarsely lacerate, about half as long as the leaves. Flowers on pedicels 1–1.5 mm. long. Bracts like the leaves but with larger and less cut stipules. Perianth segments 5, about 1 mm. long, cucullate, green with a membranous edge. Stamens 5, as long as the perianth or slightly longer, the filaments distinctly connate at the base: anthers pale yellow.

The type is *Leighton* 2189 (SAM).

Rocky or stony lower slopes and flats.

Though originally assigned to the genus *Psammotropha* this agrees with the present genus in the habit, the alternate leaves with large lacerate stipules, the solitary axillary flowers and bicarpellary ovary. Indeed, it only differs in the 5-merous flowers with the perianth not lacerate and the connate stamens.

CLANWILLIAM. N. Cedarberg, *Esterhuysen* 12067 (BOL): Pakhuis, *Esterhuysen* 14969 (BOL): Algeria, *Esterhuysen* 18173 (BOL): Keerom, *Esterhuysen* 17898 (BOL).

PIKETBERG. 24 Rivers, *Esterhuysen* 16115 (BOL): Saron, *Adamson* 1035.

CERES. Upper Olifants Riv., *Esterhuysen* 14312 (BOL, K): Wilman 14321 (K) Cold Bokkeveld Mts., *Adamson* 4716.

WORCESTER. Romans Riv., *Leighton* 2189 (BOL, K, NBG, SAM): Darling Bridge, *Esterhuysen* 6085 (BOL): Botha Siding, *Compton* 18702 (NBG).